

LANTANA SECT. CAMARA (VERBENACEAE) IN HISPANIOLA: NOVELTIES AND NOTES

Roger W. Sanders

Sanders, Roger W. (Fairchild Tropical Garden, 11935 Old Cutler Road, Miami, FL 33156, USA). *Lantana* sect. *Camara* (Verbenaceae) in Hispaniola: Novelty and notes. *Moscoso* 5: 202-215. 1989. *Lantana urticifolia* subsp. *moldenkei* and subsp. *zanonii* are described from Hispaniola and are compared to other members of *Lantana* sect. *Camara* that are indigenous to the islands.

Lantana Secc. *Camara* (Verbenaceae) de la isla Española: novedades y otras notas. Se describen *Lantana urticifolia* subsp. *moldenkei* y subsp. *zanonii* de la Española y se comparan estas subespecies a otras especies nativas de la Secc. *Camara*.

Recent revisionary studies of *Lantana* L. (Sanders, 1987; in press, a) and preparation of the treatment of *Lantana* for the *Flora Vasculare de la Isla Española* reveal two undescribed subspecies of *L. urticifolia* (Fig. 1, 2). Furthermore, the limits of all the species of *Lantana* sect. *Camara* Cham. native in Hispaniola, namely *L. bahamensis*, *L. camara*, *L. leonardiorum*, *L. subcordata*, and *L. urticifolia*, need to be clarified.

Members of sect. *Camara* are distinguished by their corollas that are usually yellow, orange or infused with red or magenta, and by their fistulose receptacles, black drupes, and inflated, obconic pyrenes. Species of *Lantana* sect. *Calliorea*s Cham. also occur in Hispaniola and will be treated in a later publication. This latter group is characterized by white or pinkish-purple corollas, non-fistulose receptacles, white or magenta drupes, and solid, bilobed pyrenes.

The new taxa are given the rank of subspecies for two reasons. First some equivalent infraspecific variants of *L. urticifolia* have wide geographic distributions in the Caribbean and South America (Sanders, in press, a). Second the nomenclature of *Lantana* is complex and confused. The resolution, which is in progress, will require in-house examination of types in European herbaria. Names that have priority at the rank of species or variety eventually may emerge, whereas the rank of subspecies is essentially free of obscure, poorly known epithets.

***Lantana urticifolia* subsp. *moldenkei* R. Sanders, subsp. nov. (Fig. 2)**

Divergens a corpore speciei *Lantanae urticifoliae* Mill. laminis folii in superficie nonsetosis, ovatis, distale curvatim acuminatis, in basi decurrentibus cum lateri margine moderate 13–25 serrato-crenato, cum bracteis

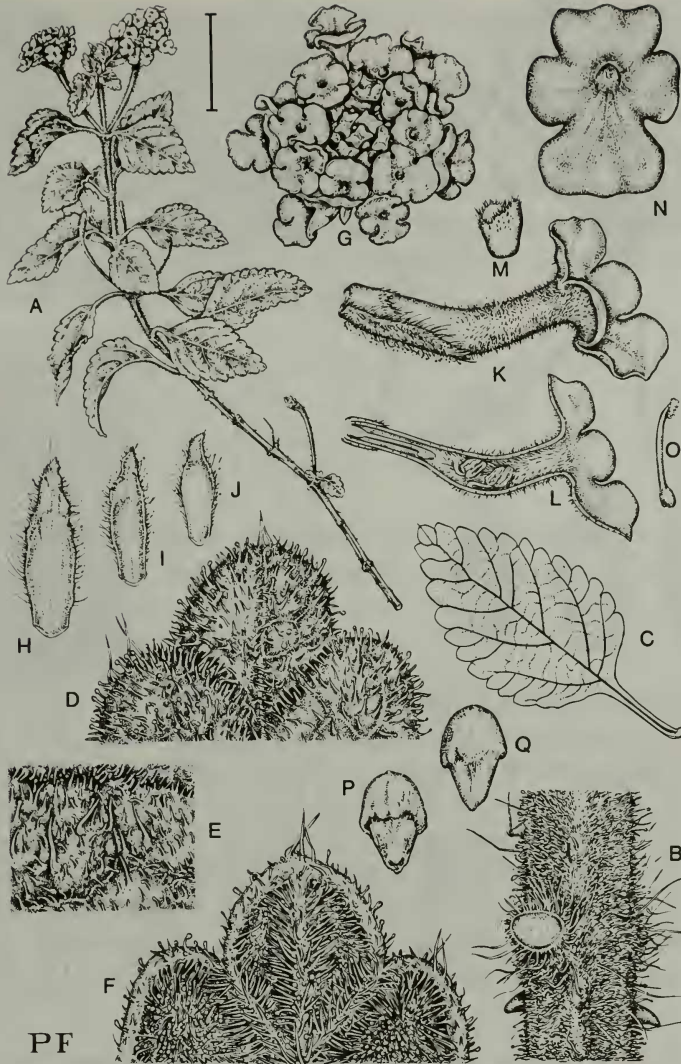
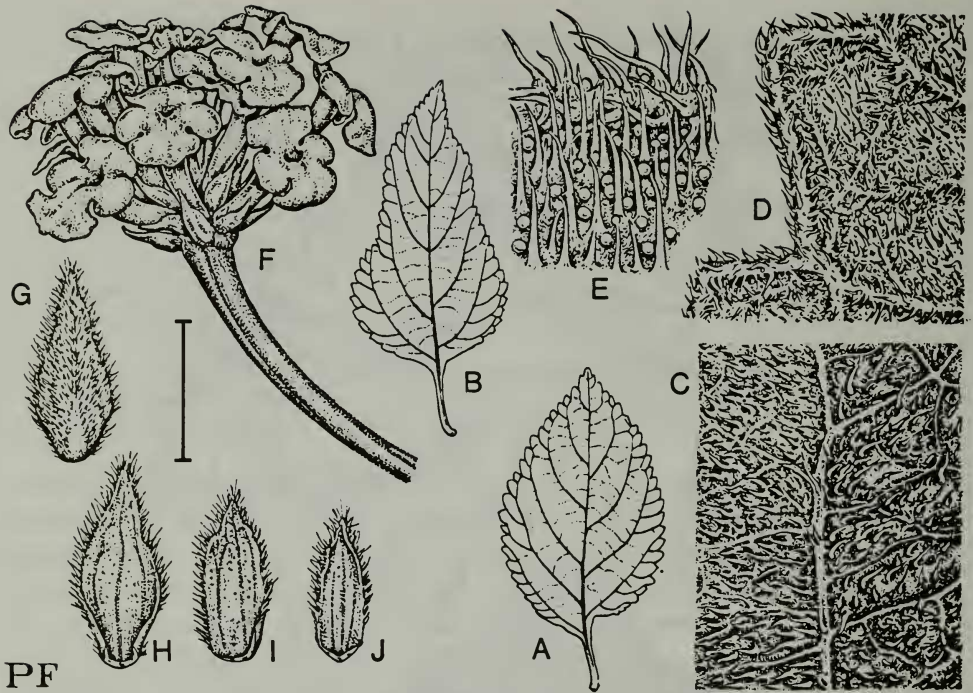


Fig. 1. *Lantana urticifolia* subsp. *zanonii*; cultivated from cuttings of Sanders 1622. A. Habitat. B. Portion of stem showing leaf scar. C. Leaf. D. Adaxial surface of lamina, apex. E. Adaxial surface of lamina, below apex. F. Abaxial surface of lamina, apex. G. Inflorescence, viewed from above. H.—J. Inflorescence bracts, adaxial view; H. Second series inward, I. Third series, J. Fourth series. K. Flower and subtending bract, side view. L. Flower, longitudinal section. M. Calyx. N. Corolla limb, face view. O. Pistil. P.—Q. Pyrene; P. Abaxial view, Q. Adaxial view. Scale bar as follows: 3 cm (A), 1.5 cm (C), 1 cm (G), 3.3 mm (H—Q), 1.7 mm (B, D—F).



PF
 Fig. 2. *Lantana urticifolia* subsp. *moldenkei*; Sanders 1621 (A, C–E, G–J), cultivated from cuttings of Sanders 1570 (F), Sanders 1604 (B). A.–B. Leaves, showing variation in shape. C. Adaxial surface of lamina. D. Abaxial surface of lamina, margin. E. Details of hairs of abaxial laminar surface. F. Inflorescence (bracts are somewhat shorter than normal, perhaps due to cultivation under colder conditions than would be natural). G.–J. Inflorescence bracts; G. Second series inward, abaxial view, H. Second series, adaxial view, I. Third series, adaxial view, J. Fourth series, adaxial view. Scale bar as follows: 3 cm (A, B), 1 cm (F), 2.5 mm (G–J), 1.7 (C, D), 0.6 mm (E).

inflorescentiae lanceolatis ubique subscariosis, adaxiale sine trichomatibus, in apice attenuatis.

Shrubs, erect or ascending, 0.5–2 m tall. Laminas mostly 3–7 cm long, cordate, ovate, narrowly ovate, or oblong lanceolate, mostly 1.3–1.7 times as long as wide, subrugose to nonrugose; veins reticulate, not noticeably impressed adaxially, somewhat emergent abaxially; base attenuately decurrent onto petiole; sides convex-rounded distally, often constricted below the acuminate apex; margins usually flat, finely serrate-crenate, teeth 13 to 17 (25) per side, 1–2 mm high, usually not tipped with antrorse setae that are larger than surrounding hairs; sinuses (from middle section of

margin) dividing the lamina mostly 1/10–1/15 the distance from the teeth apices to the midrib; adaxial surface covered (often sparsely so) normally with only eglandular hairs 0.1–0.3 (–0.6) mm long. Inflorescence bracts lanceolate or subulate, attenuate from near base, short pilose, longer hairs ca. 0.3 mm long; distal third with margins gradually converging, of the same texture and thickness as proximal portion, bearing hairs only on margins and abaxial surface or also on adaxial surface only at very tip. Corollas yellow or yellow-orange changing to orange-red on subsequent day(s); tube 7–12 mm long, limb 6–9 mm long. $2n = 44$.

TYPE: DOMINICAN REPUBLIC. Prov. Barahona: 8.5 km north of Paraiso along road to Barahona, 18° 03 N, 71° 08 W, mixed thorn-broadleaf forest, lower slopes of limestone coastal range, elev. 25–50 m, 23 Feb 1983, *R. Sanders 1621* (HOLOTYPE: JBSD!, ISOTYPES: F!, FTG!, GH!, NY!, TEX!).

Representative specimens: DOMINICAN REPUBLIC. Prov. Azua: 1 km. E of Hatillo, *Sanders 1614* (FTG, JBSD). Prov. Barahona: near Barahona, *M. Fuertes 292* (F, GH, US); 5 km N of Barahona, *Sanders 1616* (FTG, JBSD); 10 km SW of Barahona, *Sanders 1619* (FTG, JBSD); 2 km N of Paraiso, *Sanders 1623* (FTG, JBSD). Prov. Dajabón: 2 km SW of Dajabón, *Sanders 1593* (FTG, JBSD); 6 km N de Pueblo Nuevo, *T. Zanoni & M. Mejía 17832* (JBSD). Distrito Nacional: Loma Sierra Prieta, *M. Mejía & T. Zanoni 7846* (JBSD). Prov. La Vega: 25 km S of Jarabacoa, 19° 00 N, 70° 38 W, *Sanders 1606* (FTG, JBSD); 17 km N of Jarabacoa, *Sanders et al., 1605* (FTG, JBSD); 14 km NW of Constanza, *M. Mejía & T. Zanoni 5029* (FTG, JBSD); 3 km W of Santiago - Santo Domingo, Road, 19° 02 N, 70° 28 W, *Sanders 1608* (FTG, JBSD); 3–4 km W of Constanza, *Sanders et al. 1708* (FTG, JBSD); 5 km 0 de La Culata de Constanza. *T. Zanoni et al. 19230* (JBSD), NY); near Constanza, *H. von Türckheim 2999* (NY). Prov. Peravia: 38 km E of Azua, near Galeón, *Sanders 1611* (FTG, JBSD). Prov. Puerto Plata: 6–10 km S of Puerto Plata, *Sanders 1601* (FTG, JBSD). Prov. San Cristóbal: 9 km N of San Cristóbal, *M. Mejía et al. 10292* (JBSD). Prov. Santiago: Inoa, *Sanders 1580* (FTG, JBSD); 16 km E of Monción, *Sanders 1585* (FTG, JBSD); 1.5 km S of La Cumbre, *Sanders 1604* (FTG, JBSD) HAITI. Dept. de l'Ouest: Port-au-Prince, *E. Ekman 1997* (F) Dept. du Nord'ouest: Ile de la Tortue, La Vallée, *E. & G. Leonard 11220* (A, MO, US). PUERTO RICO: Between Sabana Grande and Maricao, *Sanders 1497* (FTG), *Sanders 1499* (FTG); 4 km SSE of Maricao, *L. Smith PR-34* (LL); NE outskirts of Guanica, *L. Smith, PR-21* (LL). **Intermediates:** *L. urticifolia* subsp. *moldenkei* X *L. camara*: DOMINICAN REPUBLIC. Prov. Alta-

gracia: La Playita, *T. Zanoni et al. 10853* (JBSD). Distrito Nacional: Santo Domingo, *H. Allard 13319* (US), *13845* (US), *13886* (US), *14121* (US), *14407* (US), *15898* (US); same loc., *D. Dod & T. Zanoni 10047* (JBSD). Prov. La Vega: Jarabacoa, *B. August 849* (JBSD, NY). Prov. Puerto Plata: Puerto Plata, *C. Raunkiaer 1257* (US). Prov. Santiago: Jacagua, *J. Jiménez 5189* (NY). HAITI. Dept. del Artibonite: St. Michel de l'Atalaye, *E. Leonard 7194* (GH, NY, US). Dept. du Nord: Bayeux, 18 Jan 1925 *Weir s.n.* (US). Dept. du Sud: Les Cayes,, *J. Harshberger 67* (US). Île de la Gonâve: Anse Galette, *E. Leonard 3175* (US). PUERTO RICO: 2 km S of Cayey, *Sanders 1509* (FTG); Seboruco, *Sanders 1507* (FTG); Juncoa, *R. Wagner 427* (A); near Luquillo, *L. Smith PR-47* (LL); 9 km SSW of Guaynabo, *L. Smith PR-24* (LL). *L. urticifolia* subsp. *moldenkei* X *L. leonardorum*: DOMINICAN REPUBLIC. Prov. Monte Cristi: Elevated coral reefs S of Monte Cristi, *R. & E. Howard 9574* (GH, NY, US); E de Monte Cristi, *A. & P. Liogier 22163* (JBSD, NY); near Copey, *A. Liogier 16386* (NY); same loc. *Sanders et al. 1695* (FTG, JBSD). Prov. Puerto Plata: Isabel de Torres, *A. & P. Liogier 23140* (JBSD, FTG, NY). Prov. Valverde: La Pradera, *A. Liogier 11595* (JBSD, NY); 7 km N of Cruce de Guayacanes 19° 42' N, 71° 04' W, *Sanders 1599* (FTG, JBSD). HAITI. Dept. du Nord'ouest: near Cabaret, *E. & G. Leonard 11949* (GH, US); Môle St. Nicolas, *E. & G. Leonard 13337* (US); Île de la Tortue, *E. & G. Leonard 15280* (US). *L. urticifolia* subsp. *moldenkei* X *L. subcordata*: DOMINICAN REPUBLIC. Prov. Santiago: San José de las Matas, *E. Valeur 1002* (F, LL, MO, NY, US); 15 km S of Santiago, *Sanders 1572* (FTG, JBSD). Prov. Santiago Rodríguez: Monción, *Sanders 1587* (FTG, JBSD); same loc., *E. Valeur 193* (US); "Station 9062", *A. Liogier 9062-4* (JBSD); between Monción and Sabaneta, *Sanders 1590* (FTG, JBSD).

Habitat and Distribution: Occupying a wide range of habitats from semiarid coastal plains to middle elevation mesic, pine forests and evergreen broadleaf forests; throughout Hispaniola and Puerto Rico; flowering and fruiting most of the year depending on rains and local climate.

The epithet honors Dr. Harold N. Moldenke (1909–), worldwide authority on the Verbenaceae and editor of *Phytologia*.

***Lantana urticifolia* subsp. *zanonii* R. Sanders, subsp. nov. (Fig. 1)**

Divergens a corpore speciei *Lantanae urticifoliae* Mill. laminis folii parvis, trullatis vel ovatitriangularibus vel lancitriangularibus in superficie disperse setosis, marginibus revolutulis grosse 6–11 serratis, serraturis in apice antrorse setosis, bracteis inflorescentiae plus minusve anguste oblongis vel

linearibus in base subscariosis in medio sat dilatatis distale parallelimarginatis cum consistentia foliorum adaxiale saepe cum trichomatibus, in apice abrupte acutatis vel obtusis. Differt a *L. leonardioro* Mold. laminis folii grandioribus minus bullatis plus serratis, bracteis inflorescentiae plus elongatis in apice plus acutatis.

Shrubs, ascending or subscandent, 0.5–3 m tall. Laminas mostly 1–3 (–4) cm long, trullate to ovate– or lanceolate-triangular, 1.3–1.8 (–2.0) times longer than wide, rugose; veins reticulate, impressed adaxially, emergent abaxially; base abruptly or shortly decurrent on to the petiole; sides more or less straight, converging into an acute apex; margins minutely but distinctly revolute, coarsely serrate; teeth 6 to 11 (13) per side, 1–2 mm high, usually tipped with antrorse setae that are larger than the surrounding hairs; sinuses (from middle section of margin) dividing the lamina 1/5–1/8 the distance from the teeth apices to the midrib; adaxial surface more or less densely covered with a mixture of eglandular and glandular hairs ca. 0.3 mm long and with evenly scattered setaceous antrorse hairs 0.7–1.5 mm long. Inflorescence bracts oblong-elliptic to oblong-linear, usually moderately dilated near the middle, setose-ciliate, longer trichomes 0.5–1.0 mm long; distal third with margins more or less parallel, more leaflike in texture and thickness than is proximal portion, often bearing scattered hairs on surface above. Corollas yellow or changing to orange with age; tube 5–10 mm long; limb 4–8 mm long. $2n = 22$.

TYPE: DOMINICAN REPUBLIC. Prov. Pedernales: 18 km northwest of Oviedo along road to Pedemales, 17°52'N, 71°29'W edge of dense thorn scrub on low ridge of dogtooth limestone, elev. 220 m, 1 Oct 1984, R. Sanders, T. Zanoni, & J. Pimentel 1682 (HOLOTYPE: JBSD!; ISOTYPES: F!, FLAS!, FTG!, GH!, NY!, TEX!, US!).

Representative specimens: DOMINICAN REPUBLIC. Prov. Independencia: Lemba, Marcano & Jiménez 4296 (US). Prov. La Romana: farallón de Cumayasa, A. Liogier 19198 (JBSD, NY); same loc., A. Liogier & N. Melo 24220 (JBSD). Prov. Pedernales: 18 km NW of Oviedo, R. Sanders 1622, (FTG, JBSD), 1622a (garden-grown from cuttings of 1622) (FTG, JBSD); 33–35 km NW of Oviedo, 17°56'N, 71°31'W, R. Sanders et al. 1687 (FTG, JBSD), entre Oviedo y Cabo Rojo, A. & P. Liogier 26739 (JBSD, NY); Loma de Guano, 17 km del Puerto de Cabo Rojo hacia Oviedo, 17°56'N, 71°34'W, M. Mejía & J. Pimentel 499 (JBSD); same loc., M. Mejía & J. Pimentel 500 (JBSD); Los Guanitos, A. Liogier 16956 (LL, NY, US); 32 km E of Cabo Rojo, A. Liogier 14227 (NY, US). Prov. Peravia: Loma Arroyo Mingo, 18°17'N, 70°24'W, S. Peláez & J. Czerwenka 583 (JBSD); cerca de Baní, A. & P. Liogier 22025 (FTG, JBSD, NY). Prov. San Pedro de Macorís: 2 km

N de las boca del Río Cumayasa, *T. Zanoni* & *G. Proctor* 22029 (JBSD). **Intermediates:** *L. urticifolia* subsp. *zanonii* X subsp. *moldenkei*: DOMINICAN REPUBLIC. Prov. Azua: Azua, *Rose* 3885 (NY, US). Prov. Barahona: Laguna de Rincón, Cabral, 22 May 1975, *M. Peña s.n.* (JBSD). Prov. La Romana: Boca de Cumayasa, 18° 25 N, 69° 06 W, *M. Mejía* & *C. Ramírez* 14753 (JBSD, NY). Prov. Pedernales: cerca de Pedernales, *A. & P. Liogier* 23331 (NY); same loc. *A. Liogier* 9043-7 (JBSD). Prov. Peravia: entre Baní y Azua, *A. & P. Liogier* 25917 (JBSD, NY); KM 80 near Baní, *R. Howard* 12039 (GH, NY); N of Galeón, *M. Mejía* & *T. Zanoni* 7023; near Baní, *B. Augusto* 677 (NY); Loma Las Tablas, 15 km W of Baní, *J. Czerwenka* & *S. Peláez* 402 (JBSD, NY); same loc., *M. Rewinkel s. n.* (JBSD); 5 km W of San José de Ocoa, *Sanders* 1624 (FTG, JBSD); same loc. *T. Zanoni* & *M. Mejía* 11865 (JBSD).

Habitat and Distribution: Southern coast of Dominican Republic, possibly extending into Haiti; often locally common; apparently in association with outcrops of coralline limestone and semiarid climate; flowering and fruiting May through December in association with the rainy season.

The epithet honors Dr. Thomas A. Zanoni (1949-), botanist at the Jardín Botánico Nacional "Dr. Rafael M. Moscoso" and editor of the *Flora Vascular de la Isla Española*, whose hospitality expedited my study of this taxon.

Lantana urticifolia has been misidentified primarily as *L. arida* Britton and *L. camara* L (Jiménez, 1967; Moldenke, 1959; Moscoso, 1943). Examination of the type of *Lantana arida* [HOLOTYPE: JAMAICA: Salt Pond Hills, Kingston Harbor, 2 Mar 1908, *N. Britton* & *A. Hollick* 1824, NY!] shows the name to be a synonym of *L. urticifolia* Mill. [HOLOTYPE: MEXICO. Veracruz: 1731, *Wm. Houston s. n.*, BM, photo!], a name that has not been widely applied until accepted as the correct name for the pubescent lantana in Jamaica (Adams, 1972).

Lantana camara and its closet congeners are separated from *L. urticifolia* on the basis of the structure of the foliar hairs. *Lantana camara* has stout basally geniculate, attenuately conical hairs. *Lantana urticifolia* has soft, more or less erect, more or less filiform hairs.

Lantana urticifolia exhibits continuous variation over its distribution from Mexico to South America and the Antilles. Regional differences occur in leaf size, serration, and pubescence, and in bract structure. The pubescence differences are various combinations of hair length, stiffness, thickness, curvature, arrangement, and density.

Lantana urticifolia subsp. *moldenkei* is one of the several variants encompassed by *L. urticifolia*. This subspecies closely resembles plants from

Cuba and central Mesoamerica but lacks the long setaceous hairs on the adaxial laminar surface. Its leaves are similar to those of Jamaica and eastern Mesoamerica except for the shape and degree of dentation of the laminae. A few collections (*Sanders et al. 1605, 1708*) from the higher elevations of the Cordillera Central have hispid hairs to about 1 mm or more in length. This suggests either that the character is somewhat genetically unstable, or the plants from higher elevation have retained or developed the Cuban/Mesoamerican condition in parallel. Either possibility supports the conspecific status of the geographic variants of *L. urticifolia*.

Morphological intermediates between *L. urticifolia* subsp. *moldenkei* and *L. camara* are common, especially in or around urban areas (See specimen citations below *L. urticifolia* subsp. *moldenkei*). The abaxial leaf surfaces of these plants bear both stout, geniculate hairs on the veins and dense straight hairs on the lamina and vein surfaces. I interpret these to be hybrids similar to those between *L. depressa* Small and *L. camara* in Florida (*Sanders, 1987*). Whether *L. camara* is native or naturalized in Hispaniola is not known. Regardless, human disturbance of natural habitats would provide habitat favorable for hybrids between the two species. Collections of *L. urticifolia* subsp. *moldenkei* from Puerto Rico possess to varying degrees the geniculate, stout hairs of *L. camara*. This may be the result of either simple hybridization or more complex introgression.

The degree of morphological overlap between *L. urticifolia* subsp. *moldenkei* and *L. urticifolia* subsp. *zanonii* suggests that the two are conspecific and that the latter should also be treated as a regional variant of *L. urticifolia*. Morphological intermediates exist between the two taxa (See specimen citations below *L. urticifolia* subsp. *zanonii*.) suggesting local adaptive clines or secondary hybridization.

Although the morphological variation between *L. urticifolia* subsp. *zanonii* and *L. leonardiorum* is discontinuous and they are specifically distinct, they are closely related. Both are diploids ($2n = 22$; *Sanders, in preparation*); and the two taxa are strongly disjunct — *L. leonardiorum* on the northern coast, and *L. urticifolia* subsp. *zanonii* on the southern coast. The characters that set subsp. *zanonii* apart from the rest of *L. urticifolia* find their most extreme expression in *L. leonardiorum* (Fig. 3); that is, subsp. *zanonii* is morphologically intermediate in certain characters between *L. leonardiorum* and *L. urticifolia*. Unknown is whether 1) subsp. *zanonii* is a taxon of hybrid origin, 2) subsp. *zanonii* is the ancestor of *L. leonardiorum*, or 3) subsp. *zanonii* and *L. leonardiorum* evolved in parallel from *L. urticifolia* in adaptation to similar habitats (semiarid, coralline limestones).

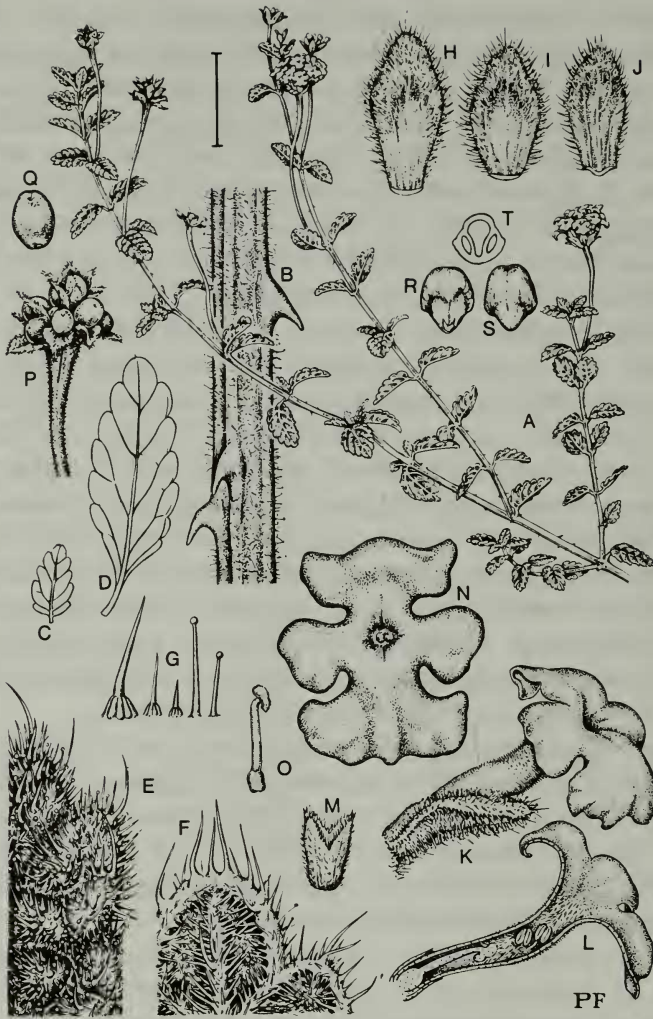


Fig. 3 *Lantana leonardorum*; cultivated from cuttings of *Sanders 1594* (A, B, G–Q), *Sanders 1594* (C, E–F, R–T), *Leonard & Leonard 11930* at A (D). A. Habit. B. Portion of stem. C.– D. Leaves, showing variation. E. Adaxial surface of lamina, margin. F. Abaxial surface of lamina, apex. G. Representative hairs from adaxial laminar surface. H.–J. Inflorescence bracts, adaxial view; J. Second series inward, I. Third series, J. Fourth series. K. Flower and subtending bract, side view. L. Flower, longitudinal section. M. Calyx. N. Corolla limb, face view. O. Pistil. P. Developing infructescence. Q. Developing fruit. R.– T. Pyrene; R. abaxial view, S. adaxial view, T. cross-section. Scale bar as follow: 3 cm (A), 1 cm (C–D, P), 5 mm (H–O, Q–T), 3.3 mm (B), 1.1 mm (E–F), 0.7 mm (G).

In the middle valley of the Río Yaque del Norte, specimens occur that strongly resemble subsp. *zanonii*. However, these plants exceed the limits of variation found in subsp. *zanonii* (láminas often longer, more narrowly triangular or oblong and with up to 15 serrations per margin) and are tetraploid ($2n = 44$; Sanders, in press b.). These northern specimens are interpreted to be simple hybrids or hybrid derivatives between *L. leonardiorum* and *L. urticifolia* subsp. *moldenkei* (See specimen citations below *L. urticifolia* subsp. *moldenkei*.).

Lantana urticifolia subsp. *urticifolia*, common in Jamaica, appears to occur sporadically in the west and south of Hispaniola. It is distinguished from subsp. *moldenkei* by the narrower, more straight-sided laminae with smaller, more crowded crenations and continuous pannose pubescence, and by the shorter bracts.

Lantana subcordata Urb. (Fig. 4), a diploid ($2n = 22$) endemic of the San José de las Matas region, shows some similarities to *L. urticifolia* subsp. *moldenkei* (tetraploid with ovate, crenate, nonglandular laminae), to subsp. *zanonii* (diploid with setaceous laminar hairs, small laminae), and to *L. leonardiorum* (diploid with small, bullate laminae, small rounded bracts). However, it appears to be specifically distinct from these taxa. *Lantana subcordata*, *L. urticifolia* subsp. *moldenkei*, and their occasional morphological intermediates (See specimen citations below *L. urticifolia* subsp. *moldenkei*.) occur sympatrically. Two of these intermediates (Sanders 1572, 1590) undoubtedly are hybrids because they are triploid ($n = 16/17$, $2n = 33$; Sanders, in press b.); this is probably true for the other intermediate collections as well.

Lantana bahamensis occurs along the northern coast of Haiti. The structure of laminar hairs indicates a close relationship with *L. urticifolia*. Generally the species is noticeably glabrescent and bears long triangular laminae that have very shallow, appressed crenations and lustrous adaxial surfaces. However, the plants from Hispaniola are more densely pubescent, such that are difficult to distinguish from *L. urticifolia* subsp. *urticifolia*. This may suggest that *L. bahamensis* should be included in *L. urticifolia*, but it may also reflect introgression between *L. urticifolia* and *L. bahamensis* where the two have come in contact.

Key to *Lantana* sect. *Camara* in Hispaniola

Hybrids between *L. camara* and the remaining species are to be expected. These cannot be keyed satisfactorily through couplet 1 because they bear a mixture of the geniculate and erect types of hairs.

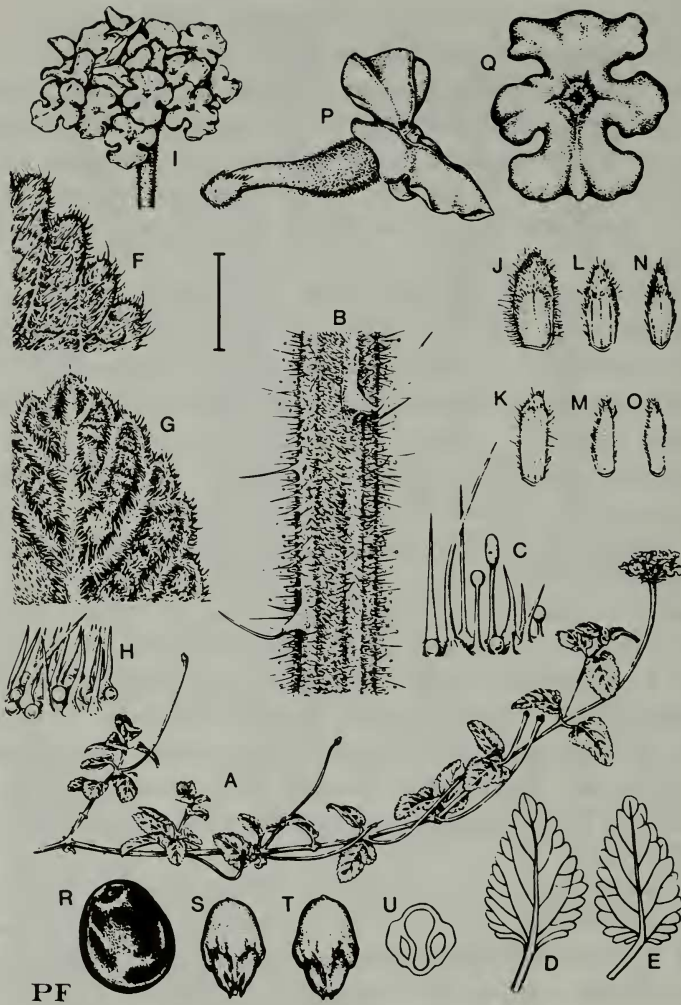


Fig. 4. *Lantana subcordata*; cultivated form cuttings of Sanders 1583; (A-C, G-I, P-Q), Sanders 1583 (E-F, K, M, O), Sanders 1575 (D, J, L, N, R-U, A: Habit. B. Portion of stem. C. Representative hairs from stem. D.- E. Leaves, showing variation. F. Adaxial surface of lamina, margin. G. Abaxial surface of lamina, distal portion. H. Hairs from abaxial surface between veins. I. Inflorescence. J.-O. Inflorescence bracts, adaxial view, showing variation; J.-K. Second series inward, L.-M. Third series, N.- O. Fourth series. P. Flower, longitudinal view. Q. Corolla limb, face view. R. Mature fruit. S.-U. Pyrene; S. abaxial view, T. adaxial view, U. Cross-section. Scale bar as follows: 3 cm (A), 1 cm (D-E, I), 3.3 mm (B, F-G, J-U), 0.4 mm (C, H).

1. Hairs of abaxial laminar surfaces sparse and somewhat remote from one another, restricted mostly to midrib, secondary, and tertiary veins, stout, attenuately conical, never gland-tipped, geniculate toward base with distal 2/3 held parallel to lamina or vein surfaces; Caribbean and widely cultivated throughout the tropics *Lantana camara* L.
1. Hairs of abaxial laminar surfaces usually abundant and crowded, at least along crevice between major veins and laminar surface, usually occurring on all veins including areoles and often on non-innervated laminar tissue, weak, filiform, gland-tipped or not, ± erect from basal insertion, spreading from lamina or vein surfaces 2
2. Inflorescence bracts elliptic-rhombic, obovate, or spatulate; apex rounded or broadly obtuse, somewhat recurved or sprenging 3
3. Laminas mostly 2–6 cm long; adaxial surface usually sparsely strigillose, with the hairs eglandular, 0.3 mm or less long, bases of hairs usually pustulate and encrusted, laminar surface exposed and shiny; abaxial surface usually pilose only in the crevice between the main veins and laminar surface; marginal teeth broadly rounded, transversely oblong, ca. 4 times longer than high; northern Hispaniola, Bahamas, and Cuba *Lantana bahamensis* Britt.
3. Laminas mostly 0.5–2.0 cm long; adaxial surface densely pilose-hirsute, the hairs eglandular or also glandular, 0.1–0.5 mm long, with a sparser canopy of longer setaceous hairs often 0.7–1.5 mm long, bases of hairs usually not conspicuously pustulate nor encrusted, laminar surface not normally exposed nor shiny; abaxial surface densely and uniformy pilose; marginal teeth mostly acute or narrowly rounded, triangular or semicircular, 1–2 times longer than high 4
4. Plants erect, low and stiffly, densely branched, usually with prickles; laminas narrowly triangular to narrowly elliptic, strongly bullate or puckered between the few (c. 3–5) secondary veins, margins revolute; teeth usually 3–6 per side; each tooth tipped by a seta stouter and longer than those on the remainder of the margin; endemic *Lantana leonardiorum* Mold.
4. Plants usually trailing or procumbent, sparingly branched, usually without prickles; laminas subcordate to ovate or ovate-triangular, rugose between the several (c. 10) secondary veins, tertiary veins and also areolar veins, margin subrevolute; teeth usually 8–15 per side; each tooth usually not tipped by a seta noticeably stouter or longer than those on the remainder of the margin; endemic. *Lantana subcordata* Urb.

2. Inflorescence bracts elliptic linear, narrowly ovate, or lanceolate; apex attenuate, acute or abruptly and narrowly rounded at very tip, not noticeably recurved. 5
5. Laminar teeth 6–11 (13) per side; each tooth usually tipped by one or more setae stouter and longer than those on the remainder of the margin; adaxial laminar surface usually with setaceous hairs 0.7–1.5 mm long between the secondary veins; Inflorescence bracts elliptic linear or narrowly oblong, widest and sometimes dilated near the middle, margins setose, apex abruptly acute or narrowly rounded; endemic *Lantana urticifolia* subsp. *zanonii* Sanders
5. Laminar teeth (12) 13–30 per side; each tooth not tipped by setae stouter and longer than those on the remainder of the margin; adaxial laminar surface lacking setaceous hairs 0.7–1.5 mm long between the secondary veins; inflorescence bracts subulate, lanceolate, or narrowly ovate, widest near the base, margins not setose, apex attenuate. 6
6. Laminas mostly 1.7–2.5 times as long as wide, lanceolate-triangular to oblong-triangular, apex acute to obtuse, base abruptly decurrent onto petiole; surfaces densely and evenly pannose, hairs uniformly about 0.1–0.2 mm long; marginal teeth mostly 17–30 per side, 0.5–0.7 mm high; inflorescence bracts usually 1/4–1/2 as long as corolla tube, narrowly ovate or acutely lanceolate; Hispaniola, Jamaica, Central America, & Mexico
 *Lantana urticifolia* subsp. *urticifolia*
6. Laminas mostly 1.3–1.7 times as long as wide, ovate or ovate-oblong, apex acuminate with protracted tip, base long decurrent onto petiole; surfaces not pannose, hairs often sparse and unevenly distributed, mixed in lengths 0.1–0.6 mm; marginal teeth mostly 13–17 (–25) per side, 1–2 mm high; inflorescence bracts usually 1/2–1 times as long as corolla tube, lanceolate-acuminate to linear-lanceolate or subulate; Hispaniola and Puerto Rico
 *Lantana urticifolia* subsp. *moldenkei* Sanders

Acknowledgments

Fairchild Tropical Garden (FTG), the Jardín Botánico Nacional “Dr. Rafael M. Moscoso”, and a grant from the American Philosophical Society supported the needed travel and field work. Priscilla Fawcett, FTG staff illustrator, drew Figs. 1–4. Curators of the following herbaria are thanked

for the loan of specimens: A, F, FTG, GH, JBSD, LL, MO, NY, US. Drs. C. E. Nauman and D.H. Nicolson reviewed a manuscript draft.

Literature Cited

- Adams, C. D. 1972. Flowering plants of Jamaica. Mona, Jamaica: University of the West Indies.
- Jiménez, J. de J. 1966 [1967]. Suplemento al catalogus florae domingensis del Prof. Rafael M. Moscoso. Forlì, Italy: Tipografía Valbonesi.
- Moldenke, H. N. 1959. A resume of the Verbenaceae. . . as to valid taxa, geographic distributions and synonymy. Mountainside, N. J.: Published by the author.
- Moscoso, R. M. 1943. Catalogus florae domingensis. New York: Universidad de Santo Domingo.
- Sanders, R. W. 1984. Taxonomic problems in *Lantana* sect. *Camara* (Verbenaceae) of Caribbean North America (abstr.) Amer. J. Bot. 71 (5, pt. 2): 185.
- . 1987. Identity of *Lantana depressa* and *L. ovatifolia* (Verbenaceae) of Florida and the Bahamas. Syst. Bot. 12:44–60.
- . In press (a). Biogeographic connections between Mesoamerica and the West Indies in the distribution of *Lantana* (Verbenaceae) species. In: Luis Diego Gómez, editor. Proceedings of the symposium on the biogeography of Mesoamerica. San José, Costa Rica: Editorial Universidad Estatal a Distancia.
- . In press (b). Taxonomic significance of chromosome observations in Caribbean species of *Lantana* (Verbenaceae). Amer. J. Bot. 74.